Information Systems Development Support (ISDS) Contract
QUALITY ASSURANCE PLAN

Developed by
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Acronyms

ATRR	Acceptance Test Readiness Review
BDR	Build Design Review
CDR	Critical Design Review
CM	Configuration Management
CRB	Configuration Review Board
CSC	Computer Sciences Corporation
CWO	Contract Work Order
DRD	Data Requirement Description
DSDM	Digital Systems Development Methodology
FCA	Functional Configuration Audit
FDD	Functional Design Document
FRD	Functional Requirements Document
ISDS	Information Systems Development Support
ISFD	Integrated Software Functional Diagram
JPL	Jet Propulsion Laboratories
ORR	Operational Readiness Review
PAO	Product Assurance Organization
PCA	Physical Configuration Audit
PDR	Preliminary Design Review
PMP	Program Management Plan
QA	Quality Assurance
QALRT	Quality Alert (form)
QAO	Quality Assurance Officer
QCRD	(Request for) Quality Corrective Action Response Date (form)
RDD	Release Description Document
RMA	Reliability, Maintainability and Availability
SCA	System Configuration Audit
SCMP	Software Configuration Management Plan
SCR	System Concept Review
SDR	System Design Review
SEAS	Systems, Engineering and Analysis Support
SIS	Software Interface Specification
SITP	System Integration and Test Plan
SOM	Software Operator’s Manual
SPMC	Software Production Management & Control
SQER	Software Quality Evaluation Record (form)
SRD	Software Requirements Document
SRR	System Requirements Review
SSD	Software Specification Document
SSDM	SEAS System Development Methodology
SSR	Software Specification Review

STP	Software Test Plan
STRR	System Test Readiness Review
TA	Transfer Agreement
TBD	To Be Determined
TBS	To Be Supplied
UG	User Guide
WIP	Work Implementation Plan

1. Introduction

1.1. Scope

This Quality Assurance (QA) Plan applies to all Contract Work Orders (CWOs) for the Information Systems Development Support (ISDS) program in support of Jet Propulsion Laboratories (JPL). The QA Plan describes the QA Program established and implemented by the QA organization within the Product Assurance Organization (PAO).

1.1.1 Philosophy

Establishment of the QA Program as part of the PAO ensures that technical and management issues associated with quality and product integrity are not compromised during system and software development. General QA processes are applied to all CWOs to assure integrity and consistency of configuration items and software support across all CWOs. Specific processes for special cases are described in each individual CWO Implementation Plan. To implement the QA Program, the ISDS Team incorporates proven processes detailed in DSDM/SSDM and D-4000 standards and procedures to the maximum extent possible.

1.1.2 Current Processes

Processes implemented for the QA Program are described in this Plan. Inputs and outputs derived from these processes are measured to determine effectiveness of current processes. Updates and enhancements to the overall QA Program can be established through incorporation of improvements to the QA Program processes.

1.1.3 Goals

Improvements to the QA Program are controlled through updates to this QA Plan and individual CWO (or Work) Implementation Plans (WIPs). As a result, the Plan acts as a "roadmap" for all processes of the QA Program. The ISDS Team maintains an active QA Program to meet the needs of all CWOs by continuously improving the quality of products and services provided by the ISDS Team to JPL.

1.2. Applicable Documents

Following is a list all relevant documents associated with the QA program. Documents specifically cited in the text which do not appear below are contained in the REFERENCES section at the end of the QA Plan.

IDI-SQPR-2168/1 01 Dec 1994	Software Quality Program Procedures for Infotec Development, Inc.
(MA002)	Configuration Management Plan for ISDS
(MA004)	Progress Metrics Plan for ISDS
D-4000 December 1988	JPL Software Management Standards Package, Version 3.0 (See D-40xx references throughout the QA Plan)
DSDM (Latest Revision)	CSC's Digital Systems Design Methodology (DSDM) Standards and Procedures (See REFERENCES section at the end of the QA Plan)
SSDM (Latest Revision)	CSC's Systems, Engineering and Analysis Support (SEAS) System Development Methodology (SSDM) Standards and Procedures (See REFERENCES section at the end of the QA Plan)

1.3. Definitions

CWO (or Work) Implementation Plan (WIP)	A top-level control document for each CWO to be used for defining and controlling the CWO effort, organizational structure, management authority and responsibility, and resource allocations, per Data Requirements Description MA 005. This plan summarizes proposed technical approach, testing plan, review plan, product assurance plan, and others.

2. Organization and Responsibilities

2.1. Quality Assurance Responsibilities

The QA organization along with Configuration Management (CM) forms part of the PAO for ISDS. The PAO reports to the Infotec Corporate Office, providing functional support and monitoring each CWO in accordance with individual WIPs. Figure 1-1 illustrates the project, QA and CM interfaces.

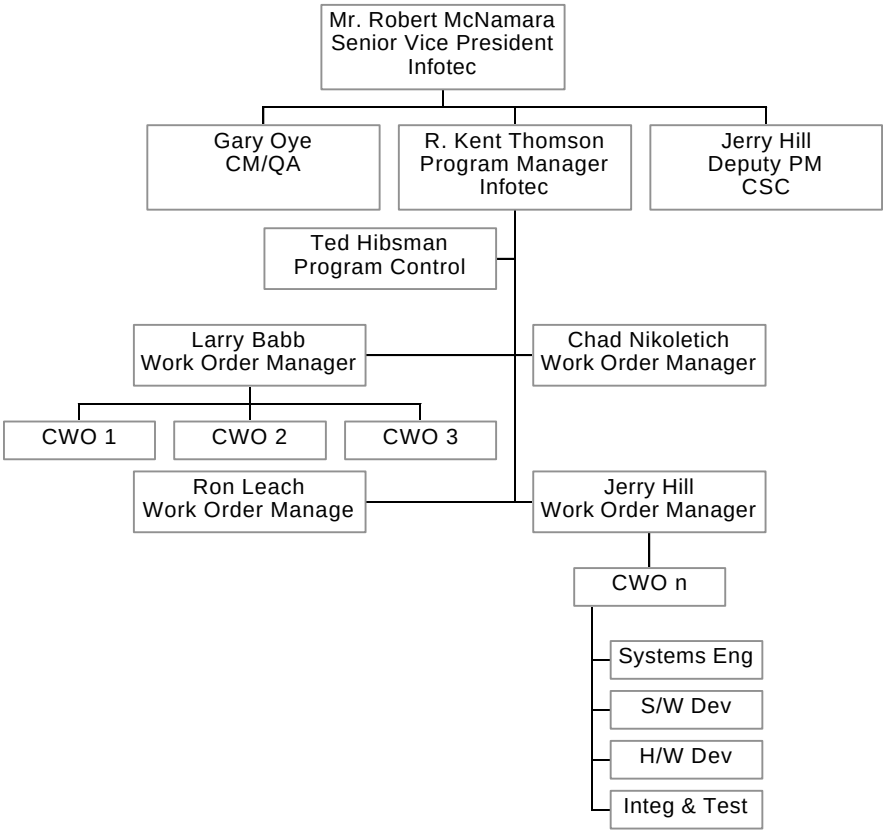

Figure 1-1. Organization

2.2. Subcontractor Quality Assurance Provisions

All ISDS Team members will follow the same QA methodology and procedures. This requirement will be reflected in all subcontract agreements. The mechanism for ensuring requirement flowdown is QA's review of all subcontracts prior to approval. Compliance will be monitored in accordance with QA processes described in this QA Plan for all ISDS CWOs and Team members.

3. Quality Assurance Approach

The ISDS Team's approach for QA focuses on evaluations and audits of processes rather than products. Products represent the completion of a given processes. By monitoring the processes, any potential deficiencies and problems can be identified and corrected preventing development of defective products. Product evaluations are performed as well, however, primarily to measure the adequacy of the processes used to generate the products. Emphasis is also placed on evaluations of corrective actions to verify proper incorporation of approved changes and recommendations for both products and processes. Together the QA evaluations

performed support continual process improvement in our efforts to increase productivity and quality.

3.1. Application of DSDM

The Digital Systems Development Methodology (DSDM) and Systems, Engineering and Analysis Support (SEAS) System Development Methodology (SSDM) provide our standards, policies, and procedures for performing quality assurance. SSDM Standard 6106 was used in preparation of this QA Plan (JPL's D-4013 was also used for reference as it pertains to QA). For convenience, SSDM 6106 and all methodology documents referenced within this QA Plan are available from the ISDS Team office upon request. CSC maintains DSDM/SSDM, and provides training of DSDM/SSDM for all ISDS Team members.

A subset of DSDM/SSDM and D-4000 is used as a guideline for each CWO to generate necessary documentation and perform CWO-specific processes. Each CWO involves a unique set of DSDM standards, policies, procedures and instructions tailored to suit the scope and requirements of the CWO. Likewise, QA monitors each CWO as tailored by individual CWO Implementation Plans.

3.2. Product Review and Inspection

DSDM/SSDM and D-4000 standards and procedures used to plan and develop products (including documents) will be identified in each CWO Implementation Plan, depending on what products are required for each CWO. QA will inspect and review products using these standards and procedures as criteria for evaluation. Review checklists will be derived from the standards and procedures.

The Software Quality Evaluation Record (SQER) form in IDI-SQPR-2168/1 will be used to document the product evaluation, and any problems found requiring corrective action. If corrections are necessary, QA files a subsequent SQER to verify proper incorporation of any corrective actions recommended from the initial product evaluation.

Sampling imposed as part of QA product review and inspection will be specified in the individual WIPs. Generally, QA's review will be considered part of the overall peer review process as scheduled through software management. The SQER is used to identify review participants, and document the product review performed prior to approval of product for internal configuration.

3.3. Life-Cycle Reviews

In addition to the peer review process discussed in paragraph 3.2, the following formal life-cycle reviews and audits may occur for a given task or project, depending on CWO scope and

requirements (Applicable DSDM/SSDM standards and procedures, and related D-4000 phases (as numerically identified in Table 2-1 of JPL's D-4000), are identified in parentheses after each review/audit listed):

(a) SCR - System Concept Review (SSDM 1312) (D-4000 Phases 1, 3)
(b) SRR - System Requirements Review (SSDM 1301) (D-4000 Phases 1, 3)
(c) SDR - System Design Review (SSDM 1306) (D-4000 Phase 2, 4)
(d) SSR - Software Specification Review (SSDM 1302) (D-4000 Phase 5)
(e) PDR - Preliminary Design Review (SSDM 1303) (D-4000 Phase 6)
(f) CDR - Critical Design Review (SSDM 1304) (D-4000 Phase 6)
(g) BDR - Build Design Review (SSDM 1308) (D-4000 Phases 6, 7)
(h) FCA - Functional Configuration Audit (SSDM 1402) (D-4000 Phase 7)
(i) PCA - Physical Configuration Audit (SSDM 1401) (D-4000 Phase 7)
(j) STRR - System Test Readiness Review (SSDM 1309) (D-4000 Phases 8, 9)
(k) ATRR - Acceptance Test Readiness Review (SSDM 1310) (D-4000 Phases 8, 9)
(l) SCA - System Configuration Audit (SSDM 1404) (D-4000 Phases 8, 9)
(m) ORR - Operational Readiness Review (SSDM 1311) (D-4000 Phase 10)

QA generally participates in the above mentioned reviews/audits by providing status and findings during the current review or audit period, and as described in the applicable DSDM/SSDM guidelines and D-4000 phase descriptions referenced or as tailored in the CWO Implementation Plans.

3.4. Audits

QA audits are performed to ensure compliance with task and project plans. Audit of test activities in accordance with test plans/procedures is described in paragraph 3.6. Audit of CM in accordance with CM plans is described in paragraph 3.7. QA audits project, system and software management against the applicable project, system engineering, or software management plan for each CWO on a periodic basis. QA audits software engineering against applicable software engineering and development plans and practices on a periodic basis.

The SQER form in IDI-SQPR-2168/1 will be used to document the process "evaluation" or audit, and any problems found requiring corrective action. Problems found with or changes needed to approved plans/procedures are documented in problem/change reports submitted to CM, and referenced in the SQERs. Failure to meet approved plans/procedures is documented in SQERs, and may require correction prior to QA approval.

3.5. Problem Reporting and Corrective Action

Reports and processes used to identify and correct problems found during testing are described in the applicable test plans/procedures prepared for the CWO. Any problems found with or changes needed to plans/procedures or approved documentation in general are documented in problem/change reports submitted to CM. Failure to meet approved test plans/procedures is documented in the test results which are evaluated by QA as documented in an SQER, and (depending on recommended solution) may require correction prior to QA approval.

Problems found during evaluation of a pre-configured software product, or process are documented in SQERs. Products or processes having problems requiring corrective action prior to approval (Refer to IDI-SQPR-2168/1 for evaluation criteria) are evaluated upon correction as documented in a subsequent SQER. Failure to correct problem results in issuance of a Software Quality Alert to Corporate Management (Refer to IDI-SQPR-2168/1 for Evaluation of Corrective Action processing).

3.6. Independent Testing

QA audits test activities in accordance with the appropriate test plans/procedures identified in the CWO Implementation Plan on a periodic basis. The SQER form in IDI-SQPR-2168/1 documents the evaluation of testing activity and resultant test results. Test results are certified once they are approved by QA. Problems found with or changes needed to approved test plans/procedures are documented in problem/change reports submitted to CM.

Independent testing separate from testing performed by System and Software Engineering is not performed by QA unless otherwise specified by the CWO Implementation Plan. Independent validation and verification is not performed by QA unless otherwise specified by the CWO Implementation Plan.

3.7. Configuration Management Oversight

QA audits CM in accordance with the appropriate CM Plan processes identified in the CWO Implementation Plan (as tailored from the ISDS CM Plan) on a periodic basis. The SQER form in IDI-SQPR-2168/1 documents the evaluation of CM activities. Problems found with or changes needed to approved CM plans are documented in problem/change reports submitted to CM.

The QA Plan is placed under configuration control upon approval by the internal Configuration Review Board (CRB) or Software Production Management & Control (SPMC). Problems found with or changes needed to the approved QA Plan or individual CWO Implementation Plans are documented in problem/change reports submitted to CM.

The QA Officer (QAO) is a representative of the SPMC. The QAO is responsible for certifying documentation approved by the SPMC, including both initial submittals and updates. QAO's role in the SPMC is described in the ISDS CM Plan and as tailored in the individual CM sections within each CWO Implementation Plan.

3.8. Quality and Productivity Data Collection and Analysis

IDI-SQPR-2168/1 provides examples of Software Management Indicators (defect density, fault density, test coverage, tracking of changes and deviations/waivers, manning resources, memory and input/output utilization, software development tools, etc.) which may be collected by QA as required by CWO. Productivity Data Collection for ISDS and QAO support of this activity are discussed in the Progress Metrics Plan (ISDS-MTRX-0000).

3.9. Tools

DSDM/SSDM and D-4000 will be used to provide criteria from which evaluations and inspections of software products and processes will be based. DSDM/SSDM guidelines will form the basis for evaluation and inspection checklists.

SQER information and a QA status report database are expected to be maintained on a PC workstation with access to software and documentation on the development systems depending on individual CWO requirements. Other tools to be used to help implement the QA program will be identified in the CWO Implementation Plans (as applicable).

3.10. Training

Product and process evaluations performed by QA are documented in SQERs (See IDI-SQPR-2168/1) and submitted to management and engineering. Periodic status reports and software management indicators are collected as required by CWO and provided to project, system and software management and engineering (Refer to IDI-SQPR-2168/1 for example Status Reports and Software Management Indicators). QA records and reports provide support in training project personnel correct usage of software management, engineering, and development standards, policies, procedures and instructions, as well as the QA procedures.

CSC provides training of DSDM/SSDM for all ISDS Team members. Training of QA procedures per this QA Plan for additional QA personnel or support will be provided by Infotec Development, Incorporated as part of the staffing process for the PAO.

4. Quality Assurance Activities

This section describes QA activities performed during each development phase once QA planning has been performed and the QA program has been implemented for each CWO. DSDM/SSDM and D-4000 standards, policies, procedures and guidelines are referenced where applicable. Individual CWO Implementation Plans tailor QA responsibilities/activities and applicable references depending on the requirements and scope of each CWO. QA activities include evaluation of software products, participation at reviews, audit of processes, problem identification and tracking of corrective actions, and data collection. It is QA's intent to measure not only the software processes, but the software quality processes for continuous improvements in software management, software engineering and development, and software QA.

4.1. Task Planning

Within each CWO Implementation Plan, there is a section pertaining to CWO-specific QA planning. The QAO is responsible for reviewing CWO requirements and determining what aspects of the overall ISDS QA program apply to that CWO.

Tailoring of general QA responsibilities and activities is documented in the CWO Implementation Plan. Also, any special considerations or processes are addressed. The CWO Implementation Plan including specific QA planning information must be reviewed and approved by the SPMC prior to implementation of the QA program for that CWO. Tailoring of DSDM/SSDM and D-4000, identification of specific tools to help implement the QA program and any special training will also be identified during task planning for each CWO.

4.2. System Concept Definition

The QAO is responsible for the following QA activities that occur during System Concept Definition:

QA Responsibilities/Activities	Application
Product Review and Inspection	System and Operations Concept (SSDM 6403) (Software) Configuration Management Plan (SCMP) (SSDM 6107) (D-4012) CWO Work Implementation Plans (as applicable) (SSDM 6111, 6116)(D-4014) Software Management Plan (SMP) (D-4011)
Life-Cycle Reviews	SCR - System Concept Review (SSDM 1312)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	(None)
Configuration Management Oversight	Audit of CM (SSDM 1600)

Quality and Productivity Data Collection and Analysis	(Periodic)

4.3. System Requirements Definition

The QAO is responsible for the following QA activities that occur during System Requirements Definition:

QA Responsibilities/Activities	Application
Product Review and Inspection	System Requirements Specification (SSDM 6410) System Engineering Management Plan (SSDM 6113) Performance Verification Plan (SSDM 6511) System Support Plan (SSDM 6601) System Interface Control Document (SSDM 6412) Acceptance Criteria Specification (SSDM 6504) Overall Facility Plan (as applicable) (SSDM 6603) System Functional Requirements Document (FRD) (D-4003)
Life-Cycle Reviews	SRR - System Requirements Review (SSDM 1301) (D-4003)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*) (SSDM 2000)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	(Part of Product and Inspection of Acceptance Criteria)
Configuration Management Oversight	Audit of CM (SSDM 1600) Functional Baseline (SSDM 1607)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.4. System Design

The QAO is responsible for the following QA activities that occur during System Design:

QA Responsibilities/Activities	Application
Product Review and Inspection	System Design Specification (SSDM 6411) System Build Plan (as applicable) Safety and Security Plan (as applicable) (SSDM 6121) Acceptance Test Plan (SSDM 6505) System Integration and Test Plan (SSDM 6512) Operation & Maintenance Requirements (SSDM 6428) System RMA Plan (as applicable) (SSDM 6122) System Functional Design Document (FDD) (D-4004) System Integration and Test Plan (SITP) (D-4004) Integrated Software Functional Diagram (ISFD) (D-4004)
Life-Cycle Reviews	SDR - System Design Review (SSDM 1306) (D-4004)

Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*) (SSDM 2000)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	(Part of Product Review and Inspection of Test Plans)
Configuration Management Oversight	Audit of CM (SSDM 1600) System Design Baseline (SSDM 1608)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.5. Configuration Item Requirements Definition

The QAO is responsible for the following QA activities that occur during Configuration Item Requirements Definition:

QA Responsibilities/Activities	Application
Product Review and Inspection	Software Requirements Specification (SSDM 6401) Logical Database Design Specification (SSDM 6407, 6425) User Interface Requirements Specification (SSDM 6423) Interface Requirements Document (SSDM 6419) Facility Requirements Specification (as applicable) Software Requirements Document (SRD) (D-4005) Software Interface Specification (SIS) (D-4005) User Guide/Software Operator's Manual (UG/SOM) (D-4005)
Life-Cycle Reviews	SSR - Software Specification Review (SSDM 1302)(D-4005)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*) (SSDM 4100)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	(None)
Configuration Management Oversight	Audit of CM (SSDM 1600) Allocated Baseline (SSDM 1609)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.6. Configuration Item Design

The QAO is responsible for the following QA activities that occur during Configuration Item Design:

QA Responsibilities/Activities	Application

Product Review and Inspection	Preliminary Design Specification (SSDM 6420) Physical Database Design Specification (SSDM 6407, 6425) User Interface Design Specification (SSDM 6405) Qualification Test Plan (SSDM 6501) Detailed Design Specification (SSDM 6424) Production Plan (as applicable) Software Interface Specification (SIS) (D-4006) User Guide/Software Operator's Manual (UG/SOM) (D-4006) Software Specification Document (SSD) (D-4006) Software Test Plan (STP) (D-4006)
Life-Cycle Reviews	PDR - Preliminary Design Review (SSDM 1303) CDR - Critical Design Review (SSDM 1304) (D-4006)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*) (SSDM 4200)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	(None)
Configuration Management Oversight	Audit of CM (SSDM 1600) Development Baseline (SSDM 1610)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.7. Configuration Item Implementation

The QAO is responsible for the following QA activities that occur during Configuration Item Implementation:

QA Responsibilities/Activities	**Application**
Product Review and Inspection	Updated Detailed Design Specification (SSDM 6424) Software Interface Specification (SIS) (D-4007) User Guide/Software Operator's Manual (UG/SOM) (D-4007) Software Specification Document (SSD) (D-4007) Software Test Plan (STP) (D-4007)
Life-Cycle Reviews	BDR - Build Design Review (SSDM 1308)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*) (SSDM 4300, 4400, 4500)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	(None)
Configuration Management Oversight	Audit of CM (SSDM 1600) Updated Development Baseline (SSDM 1610)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.8. Configuration Item Qualification Testing

The QAO is responsible for the following QA activities that occur during Configuration Item Qualification Testing:

QA Responsibilities/Activities	Application
Product Review and Inspection	Qualification Test Procedures (SSDM 6502) Qualification Test Report (SSDM 6503) Qualification Test Results (SSDM 6503) Current Detailed Design Specification (SSDM 6424) Engineering Drawings (as applicable) (SSDM 3109) User Documentation and Training Modules (as applicable) Software Transfer Agreement (TA) (D-4007) Release Description Document (RDD) (D-4007)
Life-Cycle Reviews	FCA - Functional Configuration Audit (SSDM 1402) PCA - Physical Configuration Audit (SSDM 1401)(D-4007)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	Audit of Qualification Testing (SSDM 6501, 6502, 6503)
Configuration Management Oversight	Audit of CM (SSDM 1600) Product Baseline (SSDM 1611)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.9. System Integration and Test

The QAO is responsible for the following QA activities that occur during System Integration and Test:

QA Responsibilities/Activities	Application
Product Review and Inspection	System Integration and Test Plan (SSDM 6512) System Test Procedures (SSDM 6509) Acceptance Test Procedures (SSDM 6516) System Installation and Turnover Plan (SSDM 6120) Operation and Maintenance Procedures (SSDM 6611) System Test Report (SSDM 6510) System Test Results (SSDM 6510) System Integration and Test Plan (SITP) (D-4008)
Life-Cycle Reviews	STRR - System Test Readiness Review (SSDM 1309) ATRR - Acceptance Test Readiness Review (SSDM 1310)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	Audit of System Testing (SSDM 5000, 6509, 6510)
Configuration Management Oversight	Audit of CM (SSDM 1600)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.10. System Installation and Acceptance

The QAO is responsible for the following QA activities that occur during System Installation and Acceptance:

QA Responsibilities/Activities	Application
Product Review and Inspection	Acceptance Test Results and Report (SSDM 6517) Operational Test Plans and Procedures (SSDM 6600)
Life-Cycle Reviews	SCA - System Configuration Audit (SSDM 1404) (D-4008)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	Audit of Acceptance Testing (SSDM 6505, 6516, 6517)
Configuration Management Oversight	Audit of CM (SSDM 1600) Updated Functional, Allocated and Product Baselines (SSDM 1609, 1611) Operation Baseline (SSDM 1607)
Quality and Productivity Data Collection and Analysis	(Periodic)

4.11. System Operations and Maintenance

The QAO is responsible for the following QA activities that occur during System Operations and Maintenance:

QA Responsibilities/Activities	Application
Product Review and Inspection	Operation Test Results and Report (SSDM 6600) System Operations & Maintenance Guides (SSDM 6614) Training Materials (SSDM 7000) System Development History (SSDM 6102) System Transfer Agreement (TA) (D-4008)
Life-Cycle Reviews	ORR - Operational Readiness Review (SSDM 1311)
Audits	Project/System/Software Management & Engineering per applicable plans for this development phase (*See CWO Implementation Plans*)
Problem Reporting and Corrective Action	(As Required)
Independent Testing	Audit of Operational Testing (SSDM 6600)
Configuration Management Oversight	Audit of CM (SSDM 1600)
Quality and Productivity Data Collection and Analysis	(Periodic)

5. Quality Assurance Records and Reports

QA records and reports document of the QA program for all ISDS CWOs. As part of the PAO, it is QA's intent to maintain a complete set of QA records and reports as a historical record of each CWO's progress, and to provide evidence of the ISDS Team's commitment toward continuous process improvement.

5.1. Quality Assurance Records

The Software Quality Evaluation Record (SQER) is used to document evaluations, inspections and audits performed for software products, processes (CM, testing, project/system/software management), and corrective actions. The SQER form is provided in IDI-SQPR-2168/1. For CWOs involving five or more engineers, it is recommended that the Request for Quality Corrective Action Response Date (QCRD) form be imposed (Refer to IDI-SQPR-2168/1) to promote management support and reduce potential schedule conflicts. A Quality Alert (QALRT) form is also available to handle problems which cannot be resolved at the project level.

Processing of the SQER, QCRD and QALRT forms is described in IDI-SQPR-2168/1.

5.2. Quality Assurance Reports

All QA records are maintained in a QA Project File for each CWO. Based on the contents on the QA Project File, a QA summary is derived and documented in a periodic QA status report (normally distributed or transmitted to the program manager, product assurance organization, CWO staff and personnel, at a minimum). Examples of QA status reports and software management indicators are given in IDI-SQPR-2168/1. Frequency of each report is quarterly, unless otherwise specified for a given CWO.

6. References

JPL D-4003 (12/88)	[Sub]system Requirements Analysis Phase
JPL D-4004 (12/88)	[Sub]system Functional Design Phase
JPL D-4005 (12/88)	Software Requirements Analysis Phase
JPL D-4006 (12/88)	Software Design Phase
JPL D-4007 (12/88)	Software Implementation and Test Phase
JPL D-4008 (12/88)	[Sub]system Integration, Test, and Delivery Phase
JPL D-4011 (12/88)	Software Management Planning
JPL D-4012 (12/88)	Software Configuration Management Planning
JPL D-4013 (8/88)	Software Product Assurance Standard
JPL D-4014 (12/88)	Work Implementation Planning
SSDM 1301 (6/92)	System Requirements Review
SSDM 1302 (6/92)	Software Specification Review
SSDM 1303 (8/93)	Preliminary Design Review
SSDM 1304 (8/93)	Critical Design Review
SSDM 1306 (10/90)	System Design Review
SSDM 1308 (1/93)	Build Design Review
SSDM 1309 (6/92)	System Test Readiness Review
SSDM 1310 (10/90)	Acceptance Test Readiness Review
SSDM 1311 (7/91)	Operational Readiness Review
SSDM 1312	System Concept Review
SSDM 1401 (1/93)	Physical Configuration Audit
SSDM 1402 (1/93)	Functional Configuration Audit
SSDM 1404 (7/91)	System Configuration Audit
SSDM 1600 (series)	Configuration Management
SSDM 1607	Baselines
SSDM 1608	System Design Baseline
SSDM 1609	Allocated Baseline
SSDM 1610	Development Baseline

SSDM 1611	Product Baseline
SSDM 2000 (series)	Systems Engineering
SSDM 3109 (7/91)	Engineering Drawing List
SSDM 4100 (series)	Requirements Definition
SSDM 4200 (series)	Design
SSDM 4300 (series)	Coding
SSDM 4400 (series)	(Unit) Testing
SSDM 4500 (series)	(Software) Maintenance and Enhancement
SSDM 5000 (series)	System Test and Evaluation
SSDM 6102 (6/92)	System Development History
SSDM 6106 (8/93)	Quality Assurance Plan
SSDM 6107 (8/93)	Configuration Management Plan
SSDM 6111 (10/90)	Configuration Item Implementation Plan
SSDM 6113 (1/93)	Systems Engineering Management Plan
SSDM 6116 (10/90)	System Implementation Plan
SSDM 6120	Installation and Turnover Plan
SSDM 6121	Safety and Security Plan
SSDM 6122	System RMA Plan
SSDM 6403 (6/92)	System and Operations Concept
SSDM 6405 (7/91)	User-System Interface Design Specification
SSDM 6407	Database Preliminary Design Specification
SSDM 6410 (10/90)	System Requirements Specification
SSDM 6411 (10/90)	System Design Specification
SSDM 6412	Interface Control Document
SSDM 6419	Configuration Item Interface Requirements Specification
SSDM 6420 (7/91)	(Software) Preliminary Design Specification
SSDM 6423 (8/93)	User-System Interface Requirements Specification
SSDM 6424 (7/91)	(Software) Detailed Design Specification
SSDM 6425	Database Detailed Design Specification
SSDM 6428	Operations and Maintenance Requirements

SSDM 6501 (6/90)	Software Configuration Item Qualification Test Plan
SSDM 6502 (6/90)	Software Configuration Item Qualification Test Procedures
SSDM 6503 (6/90)	Software Configuration Item Qualification Test Report
SSDM 6504 (7/91)	Acceptance Criteria Specification
SSDM 6505 (6/92)	Acceptance Test Plan
SSDM 6509 (7/91)	System Test Procedures
SSDM 6510 (6/92)	System Test Report
SSDM 6511	Performance Verification Plan
SSDM 6512 (6/92)	System Integration and Test Plan
SSDM 6516 (7/91)	Acceptance Test Procedures
SSDM 6517 (6/92)	Acceptance Test Report
SSDM 6600 (series)	Operations
SSDM 6601	System Support Plan
SSDM 6603	Overall Facility Plan
SSDM 6611	Operations and Maintenance Procedures
SSDM 6614	Operations and Maintenance Guide
SSDM 7000 (series)	Training
SSDM 9004 (8/93)	Deviation/Waiver Requests